Partner Reported Opportunities (PROs)
For Reducing Methane Emissions

Convert Pneumatics to Mechanical Controls

Compressors/Engines ☐
Dehydrators ☐
Pipelines ☐
Pneumatics/Controls ■
Tanks ☐
Valves ☐
Wells ☐
Other ☐

Applicable sector(s):

■ Production ■ Processing ■ Transmission and Distribution

Partners reporting this PRO: ExxonMobil

Other related PROs: Install Instrument Air Systems

Technology/Practice Overview

Description

Remote, non-electrified gas production, processing, transmission and distribution sites often use natural gas powered pneumatic controllers for automatic process control, resulting in significant methane emissions to the atmosphere. Some partners have reported converting these controls to mechanical devices.

The most common mechanical control device is a level controller, which translates the position of a liquid level float to the drain valve position with mechanical linkages. There is no gas usage in either the process measurement or valve actuation, and reliability is very high.

Methane Savings

500 Mcf/yr

Costs

Capital Costs (including installation)

■ < $1,000 ☐ $1,000-$10,000 ☐ > $10,000

Operating and Maintenance Costs (Annual)

■ < $100 ☐ $100-$1,000 ☐ > $1,000

Payback (Years)

■ 0-1 ☐ 1-3 ☐ 3-10 ☐ > 10

Principal Benefits

Reducing methane emissions was:

■ **A primary justification for the project** ☐ **An associated benefit of the project**

Operating Requirements

External mechanical linkages must be maintained and well lubricated.

Applicability

This technology is applicable to all gas powered pneumatic controllers where the process measurement can be close to the flow control valve.

Methane Emission Reductions

The mechanical device eliminates both the process controller bleed and the valve actuation vent emissions. A rule of thumb for evaluating gas emissions from process controls is one cubic foot per minute of gas for each control loop, consisting of the process measurement and valve actuator.

Economic Analysis

Basis for Costs and Savings

Methane emission savings of 500 Mcf/year are associated with modifying one liquid level control loop, consisting of the process measurement and valve actuation, assuming a methane content in the natural gas of 95%.

Discussion

This technology can have a fast pay back. The cost of a mechanical process control system involves both the process measurement equipment and the valve mechanical actuator. This cost may also require some piping modifications to bring the control valve into close proximity with the process measurement, or alternatively, to bring the process measurement (e.g. pressure) close to the flow control valve..